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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
EHICHIOYA, FRED I

ART UNIT	PAPER NUMBER
2172	

3

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/925,397	CHANG ET AL.
	Examiner	**Art Unit**	
	Fred I. Ehichioya	2172	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1 - 19_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1 - 19_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _2_ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

1. Claims 1 – 19 are pending in this office action.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title:

3. Claim 10 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

A process that merely manipulates an abstract idea or performs a purely mathematical algorithm is non-statutory, despite the fact that it might inherently have some usefulness, Sarkar, 588 F.2d at 1335, 200 USPQ at 139. For such subject matter to be statutory, the claimed must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts, Alappat, 33 F.3d at 1543, 31 USPQ2d at 1556-57.

If the "acts" of a claimed process manipulate only numbers, abstract concepts or ideas, or signals representing any of the foregoing, the acts are not being applied to appropriate subject matter. Thus, a process consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter and thus cannot constitute a statutory process.

In practical terms, claims define non-statutory processes if they simply manipulate abstract ideas, e.g., a bid or a bubble hierarchy, without some claimed practical application, Schrader, 22 F.3d at 293-94, 30 USPQ2d at 1458-59; Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759.

Mathematical algorithms have been held to be non-statutory because they merely describe an abstract idea. An "abstract idea" may simply be any sequence of mathematical operations that are combined to solve a mathematical problem. The concern addressed by holding such subject matter non-statutory is that the mathematical operations merely describe an idea and do not define a process that represents a practical application of the idea.

Regarding claim 10, which recites "a matching algorithm comprising GetNextMatch( ), AssignNextMatch( ), and ShiftNextMatch( ) procedures, wherein:

said GetNextMatch( ) procedure comprises the steps:

testqueue: if queue.Empty( ); .... is a method to select a variable that is unassigned" in claim 10 is a computer program per se. Claim 10 is directed to a mere program listing, i.e., to only its description or expression, it is descriptive material per se and hence nonstatutory. (MPEP 2106 IV.B.1 (a)).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

5. Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Non-Patent Document: "MediaNet: A multimedia Information Network for

Knowledge Representation", In Conference on Internet Multimedia Management

Systems. Vol. 4210 (numbered Pages 1 – 12), Boston, MA, Nov. 2000, 1

ST/SPIE.00, Author: Benitez et al (hereinafter "Benitez") in view of Non-Patent

Document: "Supporting Ranked Boolean Similarity Queries in MARS", IEEE

Trans. on Knowledge and date Engineering, 10, Nov – Dec. 1998, Author:

Ortaga et al (hereinafter "Ortega").

Regarding claims 1 and 11, Benitez teaches a method for querying stored multimedia data in a computer system, comprising:

translating, in said intermediate level, said high-level concept into low-level queries by using system pre-defined high-level concepts (see section 3 "Typical content-based. In the database or are used in the retrieval" and section 4.2 page 8 "The extended content-based, ... the procedure is shown in Figure 1"); and

transferring said low-level queries to a low level comprising one or more search engines; said one or more search engines performing a query of the stored multimedia information using said low-level queries (see section 4.2, page 9, "At this point ...... and the results integrated into a unique list as described for visual queries").

Benitez does not explicitly teach receiving into an intermediate level a high-level concept from a user describing data to be retrieved.

Ortega teaches receiving into an intermediate level a high-level concept from a user describing data to be retrieved (see section 1.2, page 4, and paragraph 1, "A Boolean ... image databases").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine teaching of Ortega with the teaching of Benitez wherein high level concepts can be expressed as a Boolean combination of lower level features. The motivation is that the user for the support of conceptual queries can provide such mapping of high to low level concepts explicitly.

6. Claims 2 – 9, and 12 - 19 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Benitez in view of Ortaga and further in view of Non-Patent

Document: "CAMEL: Concept Annotated image Libraries", In Storage and

Retrieval for Image and Video Database, San Jose, CA, Jan. 2001. SPIE

(numbered pages 1 – 12), Author: Natsev et al (hereinafter "Natsev").

Regarding claims 2 and 12, Benitez and Ortega disclose the claimed subject

matter as discussed in claims 1 and 11 respectively. Benitez or Ortega does not

explicitly teach wherein said intermediate level comprises: a set of library modules,

said set of library modules comprising: a concept library module for storing concepts;

one or more library modules adapted to store said data from said one or more

data sources; a cataloger module adapted to construct a new concept from said

high-level concept using data from said concept library and library modules, thereby

creating a concept construct, and to pass said concept construct to said concept

library module for storage as a concept; and an interpreter module adapted to

translate said high-level concept into low-level queries using said concepts stored in

said construct library and to pass said low-level queries to said one or more search

engines.

Netsev teaches wherein said intermediate level comprises: a set of library

modules, said set of library modules comprising:

a concept library module for storing concepts (see abstract, page 1);

one or more library modules adapted to store said data from said one or more

data sources (see figure 1, section 1.2 paragraph 3, page 3 – page 4, paragraph 1,

"The concept Library is a module for persistent storage of concepts. ...terminology");

a cataloger module adapted to construct a new concept from said high-level

concept using data from said concept library and library modules, thereby creating a

concept construct, and to pass said concept construct to said concept library module

for storage as a concept (see fig.3, section 1.2, page 3); and

an interpreter module adapted to translate said high-level concept into low-level

queries using said concepts stored in said construct library and to pass said low-

level queries to said one or more search engines (see section 1.2 page 4 "The

querying phase simply. ...keyword query").

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine teaching of Natsev with the teaching of Benitez and

Ortega wherein the concept interpreter looks up the representation of the visual

concept from the concept library and uses it to query the database for images

containing the relevant concept. The motivation is that once a concept is defined, it

can be used to search for relevant images without having annotated each and every

one of them.

Regarding claims 3 and 13, Benitez, Ortega and Natsev disclose the claimed subject

matter as discussed in claims 2 and 12 respectively. Ortega teaches wherein said set of

library modules further comprises at least one library module selected from the group

comprising: a matching algorithm library module adapted to store matching algorithms (see section 4.8, pages 20 and 21).

Benitez or Ortega does not explicitly teach a feature library module adapted to store multimedia features; and a constraint library module adapted to store feature constraints.

Natsev teaches a feature library module adapted to store multimedia features (see section 1.2, paragraph 2, page 3); and

a constraint library module adapted to store feature constraints (see section 5, pages 7 and 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine teaching of Natsev with the teaching of Benitez and Ortega wherein the concept interpreter looks up the representation of the visual concept from the concept library and uses it to query the database for images containing the relevant concept. The motivation is that once a concept is defined, it can be used to search for relevant images without having annotated each and every one of them.

Regarding claims 4 and 14, Natsev teaches wherein each said library module further comprises an application program interface to receive said data from a said data source (see section 4, page 7, "The last piece . . . .in Figures 4 and 5.").

Regarding claims 5 and 15, Natsev teaches wherein said cataloger module further

performs the steps of:

selecting a set of concept features from said feature library module (see section 1.2,

paragraph 2, page 3);

selecting a set of concepts from said concept library module for use as child-

concepts (see section 6, paragraph 3, page 11); and

selecting a set of constraints on said child concepts from said constraint library

module (see section 6, paragraph 3, page 11).

Regarding claims 6 and 16, Natsev teaches wherein said each said concept

comprises a triplet of a set of child-concepts, a set of features, and a set of relationships

(see section 6, paragraph 3, page 11, "Another improvement . . . ranked higher").

Regarding claims 7 and 17, Ortega teaches wherein said concepts comprise a

hierarchical fuzzy graph data tree-structure comprising nodes, aggregation edges, and

association edges and wherein: said nodes correspond to said concepts and said

features; said aggregation edges correspond to parent-child relationships; and said

association edges correspond to said constraints (see section 4.1, pages 10 and 11).

Regarding claims 8 and 18, Ortega teaches wherein said edges are weighted (see

section 4.2 page 11).

Regarding claims 9 and 19, Ortega teaches a matching algorithm comprising

GetNextMatch( ), AssignNextMatch( ), and ShiftNextMatch( ) procedures, wherein:

said GetNextMatch( ) procedure comprises the steps:

testqueue: if queue.Empty( );

```
    return NULL,

    head --> queue.Pop( );

    if head.Complete( );

    return head; head2 --> head.Copy( );

    head2.AssignNextMatch( );

        if head2.Valid( );

    queue.Push(head2);

    head.ShiftNextMatch( );

    queue.Push(head);

    Goto testqueue;

            said AssignNextMatch( ) procedure comprises the steps:

                child --> GetNextUnassigned( ); child.match_ptr++;

                if(child.match_ptr] == NULL), then; child.match_ptr -->

            child.GetNextMatch( );

                Make child an assigned node;

                        said ShiftNextMatch( ) procedure comprises the steps:

                        Child --> GetNextUnassigned( );

                        child.match_ptr++;
```

```
if(child.match_ptr == NULL), then;

        child.match_ptr --> child.GetNextMatch( );
```

wherein variables head, head2, and child, all correspond to concept nodes;

variable queue denotes a priority queue of the corresponding concept node; and

match_ptr is a pointer to the next possible match for a given concept node; Pop( ) is a

method to get the next node off the priority queue; Push( ) is a method to put a node on

the priority queue; Empty( ) is a method to check if the priority queue is empty; Copy( )

is a method to copy a node; Complete( ) is a method to check if the children assignment

is complete; Valid( ) is a method to check if the children assignment meets the

constraints; and GetNextUnassigned( ) is a method to select a variable that is

unassigned (see sections 4.6 – 4.9; pages 15 – 26).

Nonfunctional descriptive material cannot render nonobvious an invention that

would have otherwise been obvious. *Cf. In re Gulack, 703 F.2d 1381, 1385, 217*

UPPQ 401, 404, (Fed. Cir. 1983) (When descriptive material is not functionally

related to the substrate, the descriptive material will not distinguish the invention

from the prior art in terms of patentability). The difference between the prior art and

the claimed invention is simply a rearrangement of non-functional descriptive

material (MPEP 2106 VI).

Therefore, It would have been obvious to one of ordinary skill in the art at the

time the invention was made to rearrange the algorithm of Ortega to perform the

function of GetNextMatch( ), AssignNextMatch( ), and ShiftNextMatch( ) procedures.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred I. Ehichioya whose telephone number is 703-305-8039. The examiner can normally be reached on M - F 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Y. Vu can be reached on 703-305-4393. The fax phone number for the organization where this application or proceeding is assigned is 703-746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-303-3900.

Fred I. Ehichioya
Examiner
Art Unit 2172
December 11, 2003

SHAHID ALAM
PRIMARY EXAMINER